



Teacher-Community Cooperation to Promote Sustainability of Wetlands in Kenya

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Abstract

This study was undertaken with 83 teachers from 54 primary schools in Kenya. Its purpose was to establish how teachers relate with the local community and how they harness this interaction to promote sustainability of wetlands within their locality. Data were collected using questionnaires, interviews and observation. Results of the study indicated that teachers acknowledge the value of, and threats to, their local wetlands. Some teachers reported interacting and engaging in diverse activities with members of the community to conserve the local wetlands. Forums for interaction and action mentioned by the teachers included public baraza, women's groups, church, youth groups, local community, parents' meetings and environmental days. Use of these forums differed. The approaches used to involve the community in awareness and action ranged from theoretical arguments to visits to wetlands, use of wetland resources, eco-management and political action. The responses by teachers revealed lack of engagement with the real local wetland problems. This study demonstrated existence of a potential but under-utilised opportunity that can be harnessed by environmental education programmes to champion the sustainability of wetlands.

Introduction

Wetlands are areas that hold water for a reasonably long time in either a flowing or stagnant state. In Kenya, wetlands are defined as 'areas that are permanently, seasonally or occasionally waterlogged with fresh, saline, brackish or marine water including both natural and man made areas that support characteristic plants and animals' (NMK, 1999:1). They include rivers, swamps, ponds, marshes, and edges of oceans, lakes and human-constructed dams. Their characteristic wet conditions, high ecological productivity and rich biodiversity make wetlands attractive to human use and interaction.

This small scale-study explored teacher interactions with members of their communities and how they, the teachers, use the available opportunities to promote sustainable use of local wetlands. The teachers themselves are perceived to interact with the wetlands and the local community, as well as developing meanings through the interaction process which define their later actions. The interventions undertaken by them to conserve wetlands could also be perceived as being as much on behalf of the community as on behalf of the schools they serve as part of the wider community (Gough & Robottom, 1993:310). The teacher and the school are perceived to initiate and sustain activities that concur with the community endeavour to

resolve local wetland problems. The activities are perceived to integrate interactive and mutually supportive liaison and communication.

These perceptions are grounded on the assumption that the teacher and the community share wetland resources, as well as responsibilities to care for them. Interaction with, and involvement of, members of the community by teachers in addressing local wetland issues, represents breakage of the walls between the school and the community (Gough & Robottom, 1993; Sinclair, Clacherty & Lotz, 1999), and is a significant step towards socially critical engagement with pertinent local environmental issues and risks (Fien, 1993). Working with the community portrays the school and the community as working together to achieve the common goal of conserving and enhancing the local environment. This interaction and action portrays teachers' perceptions of the environment as socially constructed resulting from generation of meaning, and reactions to meanings emanating from interaction with one another and with the environment. Environmental sustainability processes involve many people working individually and collectively towards seeking consensus and responsibility to nurture healthy relationships among people and with the environment (O'Donoghue & McNaught, 1989; Gough & Robottom, 1993; UNESCO, 1997). Environmental education in this respect can be viewed as a process whereby people of all ages, interests and professions work together to enhance a reconstruction of their meanings for and interactions with the environment to improve the environment.

Research Methodology

The study is situated broadly within an interpretive paradigm, a complex term that embraces many research approaches which share a similar objective, *viz.*, to 'understand and interpret social structures as well as the meaning people give to phenomena' (Cantrell, 1993:83). The interpretive paradigm underscores that human behaviour is 'context specific' (Fien & Hillcoat, 1996:27), and that knowledge is only generated through interaction with the people being researched to understand how they create their social reality through their personal interpretations and actions (Guba & Lincoln, 1989). This paper considers teachers as active agents who continually interact with local wetlands and the community and actively respond to the emergent meanings.

Participants in this research were sampled from 242 teachers who had participated in an in-service course on wetlands conservation in January 1999 (Ndaruga, 1999). Sampling and data collection were done in two phases in 2001 and 2002. Non-probability sampling design (Sanders & Pinhey, 1983:119, Cohen & Manion, 1994:88) was used in both phases to select 83 teachers representing different regional contexts covering seven of Kenya's provinces. Both context (urban and rural) and gender (male and female) categories were considered. The disparities in teacher representation in the nine teacher in-service training workshops influenced the sampling design. For instance, out of 49 female teachers, 39 were selected using purposive sampling. The rural male teachers were numerous (130), and 20 teachers were selected using a quota-sampling technique (Cohen, Manion & Robertson, 2000:103). There were 63 urban male teachers and 22 were purposively sampled. Sampling was done on a per workshop basis to give equal opportunity to every venue, representing different regional contexts.

A postal questionnaire was used in Phase 1 (Cohen *et al.*, 2000:129) after pilot testing. Fifty-four teachers (24 females and 30 males – 67% of the sample) returned the questionnaire. The questionnaire data were then used to guide a process of selection of 10 teachers through an ‘intensity sampling technique’ (Patton, 1990:172) to participate in Phase 2 of the study. The intensity sampling technique involves selecting cases in terms of their potential to provide rich information that manifests the phenomenon of interest intensely (but not extreme unusual cases). The key factors that guided the sampling activity were the context and gender of teachers, and wetland-related activities done by the teachers. Those selected had reported having carried out varied levels of wetland education activities in school and community contexts. Semi-structured interviews and observation were used after being pilot tested with three teachers who had earlier responded to the questionnaire. The questions were expressed in English, the language of instruction in Kenyan schools.

Twenty-nine other teachers (three from each of the 10 schools (except one)) who did not attend the wetland workshops were also interviewed. The purpose of these interviews was to gather more data, especially from those teachers who had never participated in the in-service training programme on wetland issues. This was expected to shed more light on aspects of teamwork building to address local wetland issues and risks at schools.

Results

The findings of this study are presented in a sequence beginning with the role of teachers as members of the local community and their perceptions of the interactions between people and wetlands. These findings are expected to build a case to justify why addressing wetland issues should be a priority for teachers. The way teachers engage members of the community to participate in wetlands sustainability using diverse forums and activities is then reported in greater detail. These findings are then critically analysed and discussed leading to the concluding recommendations.

Teachers’ responsibilities at community level

Teachers were asked, using a questionnaire, whether they were entrusted with any responsibilities at the community level. The question intended to establish teacher interaction and appreciation at community level. Interaction is important because it enhances meaning making and exchange on various aspects of wetlands. In this study, 33 out of 54 teachers reported being involved with community activities. The involvement fell under four key areas as shown in Table 1 on the following page.

Interesting patterns occurred within this distribution – for instance, with respect to the ‘church’, 14 out of 16 teachers involved were from the rural areas. These findings concur with the Ministry of Environment and Natural Resources (MENR, 1994) report that the rural suffer from migration of educated young people who move to urban areas in search of jobs and better amenities. The teachers left behind in the rural areas are often the most educated members of the community, and it would seem that they are being entrusted to coordinate some administrative aspects of the church and other social activities. This could be a good opportunity for teachers

to champion wetland conservation in rural contexts. In urban areas, the situation is the opposite. Educated people migrate to urban areas and the chances of a teacher being noted and incorporated into the church administration and other social responsibilities among the many well-educated and employed people could be lower. The other levels of involvement within the community did not seem to vary much. Involvement in community activities portrays the teacher as a member of the local civil society and in a position to initiate and participate in matters of wetland conservation.

Table 1. Teacher responsibilities at community level

Key Area	Responsibility	No. of Teachers
Community development	Local water projects	2
	Community groupings – being an official or a member in a local NGO, local CBO, the district development committee, local welfare groups, local clan, women's groups, youth organisation, local agricultural group and being a parents' representative in a local school	23
Local church	Local church members, officials, teaching children on Sunday	16
Community education	Education advisors at church and community level	3
Persuasion/negotiation	Informal wetland conservation lobbying	2

During the interviews with the 10 teachers, some teachers complained that their interaction with the community was hampered by diverse problems. These included community hostility to the teacher, negative attitudes especially where financial implications crop up, bureaucracy whereby only the head teacher or the local administration are mandated to convene a community meeting, and lack of support from the head teacher. Some of these complaints portray the school as having a neo-classical top-down authoritative system and suggest the need for teachers to foster local goodwill with the head teacher and with members of the community. This would require breaking down these barriers through engaging the community structures and processes (Wals & Heymann, 2004; O'Donoghue & Lotz-Sisitka, 2006).

These findings underscore the need for teacher educators to realise that training to foster environmental sustainability requires being conversant with local contextual issues. As *Agenda 21* emphasised, 'One of the major challenges facing the world community as it seeks to replace unsustainable development patterns with environmentally sound and sustainable development, is the need to activate a sense of common purpose on behalf of all sectors of society' (UNESCO, 1992:197). *Agenda 21* challenges all sectors of society (including schools) to participate in and establish meaningful partnerships, in order to achieve social change and sustainable development. The teacher responses in Table 1 point to the need to recognise partnerships that are possible among teachers and the local community. Teachers, as partners participating in sustainable development, should therefore be assisted to clarify and recognise their independent roles, responsibilities and special capacities so as to enhance mutualistic relationships with their

local partners for sustainable development. Working more closely with them could allow them to share their experiences, especially on appropriate strategies to overcome contextually specific social barriers.

Teacher perceptions about community interactions with wetlands

The 10 teachers interviewed were asked to comment on what they admired about community interaction with local wetlands. The question was aimed at exploring whether the teachers understood what happened in the local wetlands. According to the Millennium Assessment Synthesis Report (MEA, 2005), ecosystems (including wetlands) provide diverse services to humans. These include *provisioning services* such as food, water, timber and fibre; *regulating services* that affect climate, floods, disease, wastes and water quality; *cultural services* that provide recreational, aesthetic and spiritual benefits; and *supporting services* such as soil formation, photosynthesis, and nutrient cycling. In this study, teachers suggested that the community get fish, employment, relaxation sites, and water for domestic use and for livestock from local wetlands. These direct-use values of wetlands fall within the provisioning and recreational services of the MEA (2005) model, suggesting that teachers recognise the intimate dependence of human beings on the natural environment. Provision of these services needs to be sustained – hence the need to address sustainability aspects of these resources which include ensuring that the benefits are shared amongst all people across generations without any injustices in access and use of the resources (UNESCO, 1992). Teachers are expected to address these issues with the community.

The same 10 teachers were asked to comment on what they disliked about community interaction with the local wetlands. They highlighted diverse concerns such as cultivating close to the wetland causing soil erosion (n=2), cutting down trees in catchment areas (n=1), plastic bags from other places can get to the ocean and kill sea animals if eaten (n=1), over-harvesting of water (n=2), bringing too many animals into the river to drink water which trample the banks (n=1), pollution by industries, solid wastes and by washing clothes (n=3), the disappearance of some species from wetlands, e.g., papyrus, (n=1), infringing the law that requires the leaving of 20 feet from the river to the farmed area (n=1), and misuse of the little water available (n=1).

The teachers also suggested some efforts undertaken by the community to take care of wetlands. These included fencing to keep cattle away (n=1), vehicle owners washing their cars in car wash and not in the river (n=1), using sewage for farming (n=1), some people getting water from taps and so not going to the wetlands (n=1), and an observation that a wetland sandwiched between privately owned farms was well taken care of (n=1).

The results suggest that teachers acknowledge why people use wetlands, the potential threats to them and the activities that people engage in to conserve them. Their responses suggest use of different wetland conservation methods, some of which are geared towards physical blockages, use of alternatives, changes of attitude towards sewage, as well as noticing of well-managed wetlands. Nevertheless, the wetland conservation measures mentioned above seem inadequate, since the teachers failed to mention the processes of engagement with local wetland problems in a way that portrays the community as proactive and seriously concerned and determined to improve their relationship with each other and with wetlands (IUCN *et al.*,

1991). These approaches, though commendable, seem weak in ensuring sustainability of local wetlands since, as Tilbury (1995) writes, sustainability integrates recognition of the relevance of local environmental problems and formulation of context specific interventions. This process seems to be lacking in the conservation measures mentioned by the teachers. The discussion in the later sections of this paper focuses on teacher involvement in addressing the local wetland problems mentioned above with members of the community.

Involving the community in knowing about wise use of wetlands

In the questionnaires, teachers were asked to explain how they enlightened the local community on the wise use of their wetlands. Twenty (13 males and 7 females) out of 54 teachers reported having involved their local community. Those who did not comprised of 17 males and females respectively. In terms of context, 11 rural and nine urban teachers involved the community while 21 rural and 13 urban teachers did not. The responses did not suggest differences between the genders and urban and rural groups.

The teachers were then asked to outline the forums they used to reach out to the community, the aim of this question being to explore the strategies available to teachers when involving the community. They reported using strategies such as *baraza* (public meetings), women's groups, church, youth groups, local community, parents' meetings and environmental days. The frequency of mention of use of these strategies is summarised in Figure 1.

Figure 1. Forums used by teachers in involving members of the community in wetlands conservation

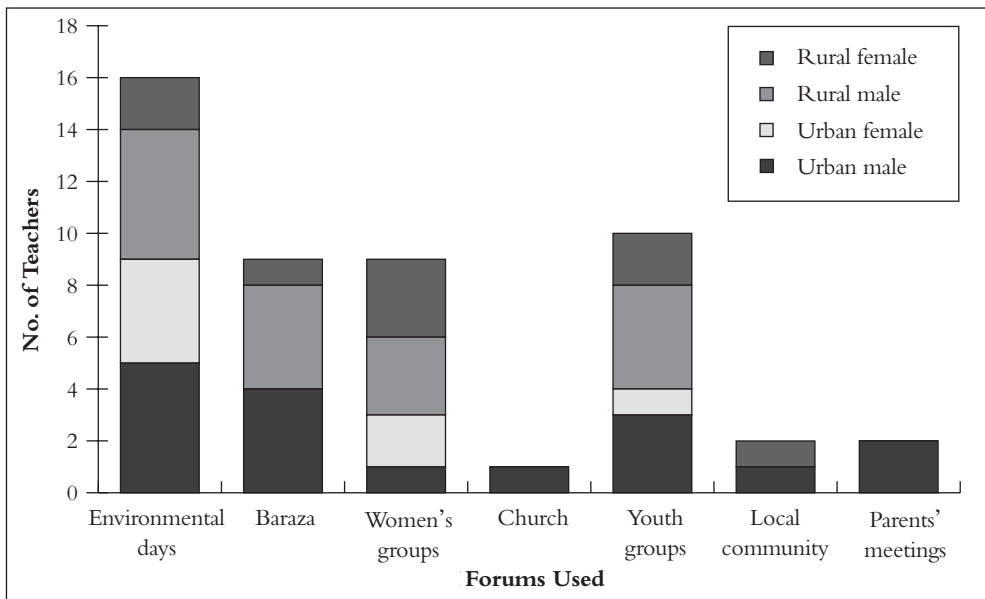


Figure 1 suggests that the most popular forums used by teachers are environmental days, youth groups, public *baraza* and women's groups. Sixteen out of 54 teachers marked environmental days (seven rural and nine urban teachers; six women and 10 men). The environmental days celebrated were local, national and international and were reported by nine, one and four teachers respectively. The local days celebrated included tree planting day ($n=4$), some days of the week ($n=2$), water conservation day ($n=1$), clean-up day ($n=1$) and school environment day. Only one national environmental day was celebrated, namely national tree planting day ($n=1$). International environmental days celebrated included World Environment Day ($n=1$), World Water Day ($n=1$) and Labour Day ($n=1$). According to Share-Net (2000) and Ndaruga (2003), there are numerous special days important at international, national and local level. The data indicate that many environmental days were not marked. Some of the reasons cited by teachers for not marking these days included lack of awareness of the exact dates, not knowing what to do and how to go about it. The findings strongly suggest the need for teacher training programmes on environmental education to address and enhance the potential value and use of environmental days.

The *baraza* were common to men in both rural and urban contexts. Only one female teacher used the *baraza* to champion for wetland conservation, as compared to eight men. This could be attributed to the few number of female teachers who reported involving the community (refer to Figure 1), as well as due to discouragements from men. Some women indicated that it was difficult to be heard by men and that any major initiative at local level requires leadership by men. These discouraging factors could be attributed to contemporary gender relations in Kenya. According to Mama (2001), women are more pervasively governed by dictates of custom and community and correspondingly less able to realise the rights afforded to citizens in general. Youth groups were also reportedly used by the male teachers to champion for wetlands conservation for instance in environmental clean-ups. Some men also reported working with women's groups in activities geared towards wetland sustainability such as environmental clean-ups and cleaning of water sources. Differences are also evident in teachers' use of various forums – especially the church, local community and the parents' meetings. The non-use of parents' meetings is alarming because the members of the community are frequently invited to the school to decide on education issues of their children. Involving parents and children in wetland sustainability activities would help expand the niche served by the school and open up a new dimension of social learning at home and community level (Payne, 2005).

In summary, the data suggest that numerous forums exist at community level for promoting conservation of wetlands. The recognition of these forums by some teachers is significant in that they represent additional opportunities that can be used by environmental educators to foster wetlands conservation. Nevertheless, since only a few teachers utilise these forums, there is need for increased effort to mobilise more teachers to recognise and use these valuable opportunities to enhance conservation of the local wetlands.

Activities with members of the community

Teachers were asked to provide details of the activities they undertake with the local community using the various forums identified above. This question was aimed at exploring the processes of

engagement with local wetland issues mentioned earlier in this paper. From the questionnaire and interview responses, the activities suggested can be grouped into ‘theoretical’, ‘visits to wetlands’, ‘use of wetland resources’, ‘eco-management activities’ and ‘political action’. The number of teachers for each activity described below is indicated in parenthesis.

Theoretical activities done away from wetlands included demonstration of wise use of water and keeping it clean (n=1), passing information through the local chief (n=1), teaching the community members, encouraging the community to dig local dams to trap water during rainy season (n=1), getting pupils to recite poems and songs on environment and wetlands (n=1), a wetland football tournament (n=1), hiring of people to clean the environment (n=1), addressing parents during a parents’ day (n=2), talking to a few people during a meeting of a catchment group (n=1), informing members of a women’s group (n=1), telling people not to wash in the river (n=1), encouraging people to plant trees (n=1) and listening to songs and poems (n=1).

Activities involving visits to wetlands included a visit to the nearest wetland to demonstrate its importance (n=1), using the school fishpond to inform visitors about wetlands (n=1) explaining about the fishpond (n=1), opening a road leading to a wetland (n=1) and warning those washing clothes in a swamp to stop the practice (n=1). Activities involving use of wetland resources included making bricks (n=1), weaving baskets (n=1), planting vegetables and pineapples using water from a wetland (n=2), preparing mud for moulding (n=1) and making pots, mats and improved *jikos* (charcoal brazier) (n=1).

Eco-management activities are defined by Tilbury (1995:203) as maintaining and improving the landscape through physical action. Activities of this nature in this study included planting trees and cover crops (n=16), cleaning up the environment and a local dispensary and town (n=9), establishing a nursery for trees, passion fruits and pyrethrum for selling and planting (n=3), terracing of sloping areas (n=3), building gabians (n=3), fencing off to protect water points (n=2), carrying stone and digging trenches to protect water (n=2), removing of eucalyptus trees from water sources (n=1), participating in protection of catchments (n=1), collecting garbage (n=1), people coming from near wetland cared for it (n=1), collecting stones to build channel for a borehole (n=1), removing water weeds and silt from a dam (n=1), conserving environment (n=1), dramatisation on environmental conservation (n=1) and constructing of water tanks for conservation of water (n=2). It is noted that eco-management approaches mentioned above are dominated by activities that mainly addressed improvement of the biophysical aspects of the local environment. Only one teacher mentioned the use of political action in this question – in the form of participating in a street procession. The teacher did not, however, state the local wetland issue they were addressing in the demonstration.

During the interviews, the 29 teachers who were not trained about wetlands were also asked to explain how they addressed local wetland issues with members of the community. This question aimed at gathering views from those not trained about wetlands conservation. Only seven teachers reported having involved the community in some conservation activities which were categorised as either theoretical or eco-management. Activities involving theoretical approaches included teacher talks about cleanliness of homes, building toilets, planting trees, how to keep rivers clean, and how to use water properly (n=5); making school posters for

everybody to see (n=1); explaining in a parents' meeting about the need to fence the school and to plant trees, the uses of trees and the need to plant them in their residences, and the need to boil water (n=2); and the teacher talking to the chief (n=1). Activities with some practical eco-management activities included community members going to rivers to conserve the soil (n=1); draining out polluted water and cleaning dams used by cattle (n=1); using river water to irrigate trees and vegetable nurseries in a women's group (n=1); using sewage water to irrigate vegetables and providing explanations to those who inquire (n=1).

The results from both groups of teachers suggest that the schools seem not to be responsive to local wetland issues and threats in practical ways. The activities presented by the teachers seem to be very apolitical and do not challenge the *status quo* in the community that is responsible for wetlands degradation. According to McKeown and Hopkins (2003:201), learning activities geared towards sustainable development should integrate developing strategies to teach awareness, skills, perspectives and values that will guide and motivate people to pursue sustainable livelihoods, participate in a democratic society, and live in a sustainable manner.

The theoretical approaches are mainly prescriptive, transmitting information to the members of the community without giving them an opportunity to contribute their reality in the process of learning and addressing the problem (Fien, 1993). An approach such as hiring of people to clean the environment is commendable but it portrays some detachment from the activity and the teacher's failure to use the opportunity to promote learning and action to address waste management.

The visits to wetlands were few and the teachers still seemed to dominate with little opportunity for community members to generate and express their knowledge. These approaches may fail to secure interest from members of the community since the knowledge transmitted may fail to be relevant to them (Babikwa, 2002). Even warning people not to wash clothes in the river does not seem to be an educational activity but rather some coercive intervention. These visits do not show features of bringing the community together for dialogue to explore the problem and to generate ideas and interventions to address pressing local issues as well as to reflect on the actions taken.

Use of wetland resources did not portray attempts to address conservation of the resource being extracted to ensure its sustainability. Some of the activities – such as getting bricks, making mats and pots – can lead to wetland degradation. The process of extraction of wetland resources could provide a good opportunity for teachers to bring up education issues of wetland values and sustainable-use levels, as well as individual responsibilities to conserve them. These aspects were not mentioned in this case.

The eco-management activities are commendable and address some of the threats to local wetlands identified earlier in this paper. Nevertheless, most of these activities do not challenge the *status quo* responsible for economic, social and political underpinnings of the wetland problems. They do not portray engagement with the wetland issues and risks as a process of dialogue, exploration, action and reflection (Gough & Robottom, 1993; O'Donoghue & Janse van Rensburg, 1995). The activities are mentioned as one-off and not as a proactive, focused and locally knowledge-driven process to address the local wetland issues and risks and to alleviate them.

Discussion of the Results

A closer analysis of the data indicates that some teachers are entrusted with positions of influence, and that teachers are able to take note of the value and threats to local wetlands. The teachers also reported having participated in diverse activities to champion for wetlands sustainability.

Nevertheless, this study did not reveal the use of methods that enhance learning about the holistic aspects of wetlands, i.e., those that integrate the interaction between the biophysical, economic, social and political aspects of the environment (O'Donoghue & Janse Van Rensburg, 1995). These holistic aspects entail learning about the broad array of wetland ecosystem services (supporting, provisioning, regulating and cultural), and how they influence human wellbeing attributes (security, as basic material for good life, health, good social relations and freedom of choice and action) (MEA, 2005). The activities facilitated by the teachers failed to show these interactions and could, therefore, be regarded as inadequate in contributing to community understanding of their relationship with wetlands.

The study found that the teachers used a narrow range of methods to engage in wetlands sustainability education with members of the community. This narrow range of methods seems to be inadequate since they lack features of a proactive engagement with local wetland issues and risks, as well as the *status quo* as a form of social praxis, i.e., socially-based locally informed action. The responses failed to show deliberate and sustained engagements that address local social and socio-economic issues, particularly as these pertain to the ecological dimensions of wetland ecosystems and ecosystem services, as well as their relationship with human wellbeing.

It was also notable that the activities undertaken seem to be weak in ensuring sustained concern and action to conserve the local wetlands since they seem faintly related to the local wetland problems. In this study, teachers prioritised the provisioning and recreational services as their prime indicator of mutual relationships between the community and wetlands, in terms of providing fish, employment, relaxation sites, and water for domestic use and for livestock from local wetlands. They also indicated a diversity of problems and dislikes associated with local wetlands. According to McKeown and Hopkins (2003:19), learning activities geared towards sustainability should always be implemented in a *locally relevant* and *culturally appropriate* fashion. This study expected these features to be prominent in setting the agenda for engagement with the local community. Most of the activities reported by teachers seemed, however, to have drifted away from perceived local challenges. Following Stapp and Wals (1994:57), '... the surest way for a group to fail in solving a community problem is to accept a palliative – an action that is not a real solution and address only the surface problem and not the underlying causes.' Although eco-management activities show an attempt to address the local wetland problems practically, they seem unrelated to the real problems mentioned earlier by teachers. Hence, they appear to be inadequate in discouraging the recurrence of further wetlands degradation. The inadequacy could be traced to weak or non-integration of a holistic outlook of wetlands that recognises and practically addresses the social, economic and political underpinnings responsible for wetland degradation, and the relationship between human wellbeing and ecosystems (see MEA, 2005) as discussed earlier.

The response to wetland problems also failed to show a process of dialogue, encounter and reflection to generate appropriate action. If we accept Jensen and Schnack's (1997:164) contention that, '... environmental problems are structurally anchored in society and our ways of living. For this reason, it is necessary to find solutions to these problems at both the societal and individual level', there is still some way to go. Teachers were expected to involve members of the community in dialogue on aspects that illuminate issues of values, ethics, justice and equity regarding the local wetland resources, but activities presented by teachers tended to be dominated by transmission, experiential field trips and some action taking. These activities fall under what O'Donoghue and Lotz-Sisitka (2006) categorise as experiential learning. They argue that such experiential approaches do not reflect ideals of democratic agency and activism which, this study argues, are needed for sustained engagement with emergent wetland threats. This suggests the need for training programmes for teachers that involve what Le Roux (2000) calls 'the process approach' to solving environmental problems that are grounded in local contextual relevance. O'Donoghue and Lotz-Sisitka (2006) argue that a process approach involves processes of guided deliberation in order to allow communities to make decisions on what is to be done. In such an approach, the teacher would become an active participant in, and facilitator of, a process which involves communities in learning actions that require them to make informed decisions and implement chosen solutions and strategies.

Conclusions

The data generated from teachers in this study portray them as having local knowledge about the values of and threats to wetlands, and about some appropriate activities that can be deployed to address wetland problems. The teachers also acknowledged being strategically placed in terms of having diverse partners and responsibilities at community level. They also identified diverse forums that could be used to engage members of the community in wetlands conservation. This study recognises that reflection on utilisation of these valuable opportunities by various players in environmental education is necessary in order to identify gaps and address them. There is need for popularisation of these opportunities and the appropriate activities that could be done.

Since teachers acknowledged existence of local wetland problems, this study expected them to be actively engaged in addressing these problems through diverse approaches. Only a few teachers, however, engaged the members of the community in wetland conservation activities. The approaches used were dominated by theoretical approaches. Where outdoor visits were used, the community members were not given adequate opportunity to freely contribute to the environmental learning and action process. Practical eco-management activities also seemed inadequate in addressing local problems identified by teachers.

Some policy issues were noted – such as lack of harmony and reciprocation between the school and the community when dealing with local environmental issues. It would seem advisable that schools, as institutions serving the local community, should collaborate more closely to maximise use of every available opportunity. Harnessing, prioritisation and harmonisation of local policies to recognise the school as a major partner in addressing

local environmental issues is important. This suggests the need for environmental education programmes to harness and enhance local policies to illuminate the need for all institutions to work together to address local environmental problems. This also calls for partners and schools to accord each other the time, resources and necessary support.

Most significantly, however, would appear to be the finding that there is a lack of an holistic understanding and approach to responding to wetland degradation amongst teachers. Knowledge of culturally situated active approaches to learning would seem to be an important dimension of building a broader, more holistic response to wetland conservation amongst teachers.

Notes on the Contributors

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